Re: Meeting Notes ETV High Rate Separation Panel

Date: July 20, 1999

Location: Philadelphia Marriott Hotel

Attendees: Kevin Smith - NSF International
Bob Andoh - H.I.L Technology
Randel West – Camp, Dresser, & McKee
Bob Matthews - Camp, Dresser, & McKee
Philippe Topalian – Kruger, Inc.
George Zukovs – XCG
Mary Stinson – USEPA
Rich Field – USEPA
John Shephard – Schreiber Corp.
Adrian Carolan – Schreiber Corp.
Jim Zaccagnino – URS Greiner Woodward Clyde
Gabriel Novac – Grande, Novac & Assoc., Inc.
Steve Tarallo – IDI
John Schenk – NSF International.

1. Panel members noted two amendments to the notes from the May 13, 1999 teleconference:
    1. No ballasted flocculation trials are underway in Kansas City.
    2. The New York City vortex evaluation protocols are being peer reviewed by WERF.

2. **Update on Evaluations**

    A panel member indicated that the study team working on the New York City vortex separator evaluation had met with the WERF Peer Review Panel to discuss separator evaluation protocols. Protocols will be updated as a result of the meeting. The New York City vortex separator study is presently waiting for wet weather.

    An evaluation program was carried out in Port Clinton, Ohio, to evaluate the Actiflo ballasted flocculation system. The three-week study introduced

potable water into the collection system to simulate combined sewer overflow.

San Francisco plans to initiate its study of high rate separation alternatives for CSO treatment in the period from the end of 1999 to the beginning of 2000.

The full-scale Actiflo facility in Paris is scheduled to start-up in September to October, 1999.

At the time of the Panel meeting, IDI had started testing the Densadeg chemically enhanced high rate separation system in New York City.

3. **Review of Proposed Protocol Table of Contents**

Panel Members were requested to submit written or e-mail comments to G. Zukovs pertaining to the first draft of these protocols.

4. **Protocol Development Issues**

G. Zukovs presented a number of issues related to protocol development. The presentation materials are attached.

Key decisions by the Panel were as follows:

1. Objectives of Testing

It was agreed that the objective of testing was the development of a verification report and statement. It was stressed that high rate separation equipment performance verification would be site specific and might not represent every environmental condition.

2. Influent Types

The Panel discussed influent types (e.g. CSO, SSO, stormwater) to be evaluated under protocol development. It was agreed that the vortex separator protocol would focus on CSO while the ballasted flocculation protocol would focus on CSO and SSO. Treatment of separated stormwater by either technology would not be considered at this time. It was also noted that the pending draft SSO treatment regulation may shed some light on the applicability of satellite physical-chemical treatment for SSOs.

3. Pretreatment

The Panel reviewed whether pretreatment (i.e. screening and in some

cases degritting) was part of the process train and hence should be considered in the evaluation. It was agreed that some type of pretreatment is typically required for ballasted flocculation and that the generic protocol should describe the details of pretreatment requirements in the equipment description section. It was also agreed that an additional sample point prior to the pretreatment (i.e. raw wastewater) should be included in the monitoring protocol.

4. *Actual vs. Simulated Conditions*

Panel Members discussed at some length the use of actual vs. simulated conditions in testing. Key points of agreement in the discussion were as follows:

- Vortex separators would only be tested under actual conditions. Since there are a number of full-scale vortex separator installations in the United States, it was felt that there would be no need to simulate flows or operations.
- The generic protocol for ballasted flocculation will give overall guidance regarding the use of simulated flows and operating conditions.

  The details of the simulated test conditions (if any) will be developed jointly by the Field Testing Organization (FTO), the Municipality or sewerage agency and the manufacturer. The details will be presented in the site specific Test Plan.
- The Verification Report and Verification Statement will reflect the use of simulated flows and operating conditions as appropriate.

5. *Vortex Separator Performance Indicators*

Panel Members discussed both measures of treatment performance as well as operations. Suggested treatment performance indicators include:

- Gross removal;
- Net removal;
- Treatment factor;
- Concentration factor;
- Effluent concentration;
- Floatables index (to be defined).

Suggested vortex separation operations indicators include:

- Operating requirements: labour and power;
- Underflow volume and peak rate and characteristics;
- Operating observations;
- O & M manual details.

6. Ballasted Flocculation Performance Indicators

Suggested treatment performance indicators for ballasted flocculation included:

- Percentage removal;
- Effluent concentration.

Suggested operations performance indicators included:

- Underflow volume and peak rate and characteristics;
- Operating observations;
- O & M manual details.

7. Vortex Separator Parameter List

Panel Members discussed a list of core parameters used for either treatment performance evaluation or influent characterization. Suggested vortex separator parameter list includes:

- Settling velocity distribution (SVD);
- Particle size distribution (PSD);
- TSS;
- Floatable;
- Settleable solids;
- $CBOD_5$;
- COD.

SVD, PSD and settleable solids are influent characterization parameters while TSS, floatables, $CBOD_5$ and COD are treatment performance parameters. It was noted that floatables will likely need to be differentiated into sub-categories that my include: oil and grease, screenables, "swimmers" and true floatables (i.e. positive

buoyancy). Other parameters may be included by the FTO, owner or manufacturer in site specific instances.

8. Ballasted Flocculation Parameters

Core parameters suggested for ballasted flocculation treatment performance evaluation included:

- TSS;
- $CBOD_5$ (total);
- COD (total);
- Total p.

Other parameters for performance evaluation or influent characterization may be considered on a site-specific basis.

9. Testing Phases

Panel Members reviewed details of proposed testing phases from site and influent characterization through verification testing (see attached presentation notes).

10. Equipment Scale

The issue of the scale of equipment testing was reviewed by Panel Members. It was agreed that the scale issue would be addressed jointly by the FTO, owner and manufacturer on a site-specific basis. The Verification Report and Verification Statement would reflect the scale of equipment used in testing.

11. Protocol Development Schedule

Panel Members were presented with an updated protocol development schedule (see attached). It was noted that no further face-to-face meetings were contemplated but that a teleconference would be used to follow-up the next draft of the protocol documents.